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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/764,318	01/19/2001	Shozo Oguri	2001-0046A	6772

513 7590 04/15/2004

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EXAMINER

THOMAS, DAVID B

ART UNIT	PAPER NUMBER
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3723

18

DATE MAILED: 04/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/764,318

Applicant(s)

OGURI ET AL.

Examiner

David B. Thomas

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on November 28, 2003; January 13, 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8-13, 16, 19 and 23-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-13, 16, 19 and 23-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>10</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Allowable Subject Matter*

1. The indicated allowability of claim 5 is withdrawn in view of the newly discovered reference(s) to Sandhu et al. Rejections based on the newly cited reference(s) follow.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 4, 5, and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Sandhu et al. (5,975,994).

Sandhu et al. ('994) disclose a method and apparatus for selectively conditioning a polished pad used in planarizing substrates. The polishing apparatus of Sandhu et al. ('994) includes: a polishing table having a polishing surface; a top ring for holding a workpiece and pressing the workpiece against the polishing surface; a dresser for dressing the polishing surface; a sensor for observing irregularity or undulation of the polishing surface on the polishing table while the polishing surface is being dressed, the sensor being mounted on the dresser; and, wherein the sensor (in the case of a stylus that engages the polishing surface, Col. 8, lines 7 and 8) is, inherently, vertically movable independently of the top ring or the dresser.

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4. Claims 6, 8, and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Arai et al. (6,040,244).

Arai et al. ('244) disclose a polishing apparatus comprising: a polishing table having a polishing surface; a wafer carrier for holding and pressing a workpiece against the polishing surface; a dresser for dressing the polishing surface; a sensor for observing irregularity or undulation of the polishing surface while the polishing surface is being dressed; a determination device for comparing an initial property of the polishing surface, etc., and determining when to replace a component of the polishing surface based upon a result of the comparison between the initial property and the subsequent property; and a display device for displaying the property of the polishing surface observed by the sensor. Regarding the carrier head for holding the workpiece, whether the carrier head of Arai et al. ('244) includes a top ring or not, is a moot issue, as carrier heads having a top ring for supporting the workpiece during polishing were well known in the art at the time the invention was made, and the examiner respectfully contends that this particular limitation is not germane to the patentability of the present application.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. Claims 3, 12, 13, 16, 19, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sandhu et al. ('994), as applied to claims 1, 2, 4, 5, and 25 above, in view of Arai et al. ('244).

Sandhu et al. ('994), as applied to claims 1, 2, 4, 5, and 25 above, disclose the claimed invention except for the provision of a display device for displaying the property of the observed polishing surface. Arai et al. ('244) teach changes in the contour and surface roughness of the pad surface caused by processing are determined based on the contour and the surface roughness, and based on these changes, the reproduction and the replacement signals are output to a display device 21 and represented in character or voice formats. In this case, the measured data can be continuously displayed on the display device 21 (Col. 4, lines 27-34). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the polishing apparatus of Sandhu et al. ('994) by providing a display device, such as clearly suggested by Arai et al. ('244), in order to provide operator interface.

7. Claims 6 and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sandhu et al. ('994), as applied to claims 1, 2, 4, 5, and 25 above, in view of Birang et al. (5,875,559).

Sandhu et al. ('994), as applied to claims 1, 2, 4, 5, and 25 above, disclose the claimed invention except for the provision for a determination device for comparing an initial property to a subsequent property of the polishing surface, and determining when to replace the polishing surface as a result thereof. Birang et al. ('559) discloses a

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polishing pad profiler which, among other components, utilizes a sensor having a sensing arm 266 which slides up and down independent of a top ring or a dresser, and a display device 410, and further teach that the profiler may be used to scan the top surface of a fresh polishing pad, the results of this scan are stored as a baseline, and then after polishing, the pad profiler scans the pad again, the results are then compared to the initial scan, thus serving as a comparison between an initial property of the polishing surface and a subsequent property (Col. 11, lines 45-65). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the polishing apparatus of Sandhu et al. ('994) by providing both a display device, in order to provide operator interface, and a determination device for comparing an initial property and a subsequent property of the polishing surface, in order to both determine a polishing surface wear profile and to determine at what point the polishing surface should be replaced, as both features have been clearly suggested by Birang et al. ('559) in order to provide a polishing apparatus which optimizes polishing throughput, flatness, and finish, while minimizing the risk of contamination or destruction of any substrate, and further extends the useful life of a polishing surface before the polishing surface must be replaced.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bartels et al. (5,834,645) disclose a contact probe assembly for a CMP apparatus. Birang et al. (5,974,679) disclose a method of conditioning a polishing pad. Moore (6,306,008) discloses a method and apparatus for conditioning

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and monitoring a polishing surface. Sandhu (5,618,447) discloses a contour meter for monitoring the contour of the polishing surface during CMP. Southwick (6,238,273) discloses sensors for monitoring the polishing surface during CMP.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David B. Thomas whose telephone number is (703) 308-4250. The examiner can normally be reached on 7-4 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph J. Hail can be reached on (703) 308-2687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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David B. Thomas  
Patent Examiner  
Art Unit 3723